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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,141	02/15/2002	Wayne E. Conrad	88630.213CIP	9852

7590 03/08/2006

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EXAMINER

CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/076,141	<b>Applicant(s)</b> CONRAD ET AL.	
	<b>Examiner</b> MONZER R. CHORBAJI	<b>Art Unit</b> 1744	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

**This final rejection is in response to the amendment received on 12/05/2005**

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Meston (U.S.P.N. 4,933,118).

The Meston reference discloses a container (figure 1:1) having the following: two sides with space in between (figure 1:5 and 7), two inlets for a first and second fluid (figure 1:18 and 21), first baffle (figure 5:13) is inclining upwardly and extending from the first side toward the second side thereby forming a first gap between the first baffle and the second side, the first baffle is capable of being upwardly inclined at a first angle between 10 and 45 degrees (col.5, lines 29-65) and an outlet (figure 1:28).

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-2, 4-6, 12 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578).

With respect to claim 1, the Turk reference discloses a fluid contact chamber including the following: a container (10) for a first fluid (14) having first and second sides, inlet for a second fluid (11), a means for directing the flow of the first fluid (12) such that at least one eddy is formed (ozone gas is sparged into the second fluid which is flowing countercurrent to water that intrinsically results in the formation of eddies, col.3, lines 51-59, the ozone bubbles flow along the lower surface of baffle, 12), the

means for directing includes first baffle extending from the first side toward the second side (12), forming a first gap between the first baffle and the second side and an outlet for passage of the first and second fluid (water containing ozone is discharged through outlet, 21 as mentioned in col.4, lines 3-5). The Turk reference fails to teach a first baffle inclining upwardly at a first angle between 10 and 45 degrees; however, since in the Turk reference ozone gas is injected at the bottom of the contact chamber, one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate between the contaminated water and the ozone gas.

With respect to claims 2 and 5, The Turk reference discloses multiple horizontal baffles extending from both sides of the contact chamber, but fails to teach inclining the baffles upwardly such a tilting results in modifying the surface of the baffle from horizontal position to upwardly inclined position. Since in the Turk reference ozone gas is injected at the bottom of the contact chamber, one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate between the contaminated water and the ozone gas.

With respect to claims 4, 6, 12 and 15-16, the Turk reference teaches the following: a catalyst is disposed in the container (col.3, lines 51-53), means for chemical modification (the use of catalyst), first baffle extends at least 80% of the width of the chamber (figure 1, 12), first fluid is introduced in a counter flow to the second fluid (10, 14 and 11) and the directing means defines a serpentine flow path through the chamber (ozone bubbles flows in a serpentine flow path around baffles 12 in 10).

With respect to claims 17-20, The Turk reference discloses multiple horizontal baffles extending from both sides of the contact chamber, but fails to teach inclining the baffles upwardly at certain preferred angles. Since in the Turk reference ozone gas is injected at the bottom of the contact chamber, one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate between the contaminated water and the ozone gas and absent any evidence regarding criticality to upwardly inclination angles, determining the proper range of upwardly inclined angles is a matter of routine experimentation.

With respect to claim 21, The Turk reference discloses multiple horizontal baffles extending from both sides of the contact chamber, but fails to teach inclining the baffles upwardly such a tilting of the baffles result in forming a third gap defining a truncated triangular cross section. Since in the Turk reference ozone gas is injected at the bottom of the contact chamber, one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate between the contaminated water and the ozone gas.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) as applied to claim 1 and further in view of Burgher (U.S.P.N. 5,091,118).

With respect to claim 3, the Turk reference fails to teach the use of a venturi tube; however, the Burgher reference, which is in the art of sparging gases into liquids, teaches the use of venturi (30). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by adding

venturi means as taught by the Burgher reference in order to maximize the concentration of the gas in the liquid (col.1, lines 61-64).

8. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) as applied to claim 6 and further in view of Lund et al (U.S.P.N. 4,028,246).

With respect to claims 7-8, the Turk reference fails to teach the use of ultrasonic and ultraviolet emitters; however, the Lund reference, which is in the art of liquid purification, teaches the use of ultrasonic and ultraviolet emitters (34 and 33). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by adding ultrasonic and ultraviolet emitters as taught by the Lund reference since the combination of such emitters result in a synergistic effect for better fluid treatment (col.2, lines 5-7).

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Lund et al (U.S.P.N. 4,028,246) as applied to claim 8 and further in view of Olsen (U.S.P.N. 5,683,576).

With respect to claim 9, both the Turk reference and the Lund reference fail to teach where ultrasonic emitter is placed at an angle relative to the first and second baffles such that ultrasonic signal is directed through the eddy. The Turk reference fails to teach inclining the baffles upwardly; however, since in the Turk reference ozone gas is injected at the bottom of the contact chamber, one of ordinary skill in the art would recognize that inclining the baffles to an angle between 10 and 45 degrees would result in improving the mixing rate between the contaminated water and the ozone gas.

With respect to claim 9, the Olsen reference, which is in the art of treating water, teaches placing ultrasonic emitter within the water treatment chamber (figure 2, 40). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Turk reference by placing ultrasonic emitter within the chamber as taught by the Olsen reference since the sonic waves disburse fine bubbles into microbubbles causing a greater mass transfer that result in increasing efficiency of water treatment (col.3, lines 54-60).

10. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Burgher (U.S.P.N. 5,091,118) as applied to claim 3 and further view of Lund et al (U.S.P.N. 4,028,246).

With respect to claims 13-14, both the Turk reference and the Burgher reference fail to teach a removable insert from the chamber; however, the Lund reference, which is in the art of liquid purification, teaches the use of a removable baffles (20). (See col.4, lines 14-20) with the inserts being 24 for supporting removable baffles 20. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stationary baffles of the Turk reference by substituting them with removable ones since such a substitution is a matter of choice of design as evidenced by the Lund reference.

11. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) as applied to claim 4 and further in view of Schenck (U.S.P.N. 5,753,106).



With respect to claim 10, the Turk reference fails to teach the use of titanium dioxide; however, the Schenck reference, which is in the art of water treatment, teaches the use of titanium dioxide (col.17, line 42). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by including titanium dioxide as taught by the Schenck reference in order to improve the photopurification process by counterbalancing the effects of the contaminants absorption that result in restricting photochemical reactions (col.17, lines 39-49).

With respect to claim 11, the Turk reference teaches that the inlet at a lower portion of the container (14).

### ***Response to Arguments***

12. Applicant's arguments filed on 12/05/2005 have been fully considered but they are not persuasive.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 9:00-5:30.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GLADYS J. CORCORAN can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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AU 1744  
02/22/2006

  
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